CLAIMS

We claim:

1. A pay-for-view display delivery system for delivering at least a selected portion of video images for an event wherein the event is captured via multiple streaming data streams and the delivery system delivers a display of at least one view of the event selected by a pay-per-view user using at least one portion of the multiple streaming data streams and wherein the event is captured using at least one digital wide angle/fisheye lens comprising:

a camera imaging system/transceiver having at least two wide-angle lenses/a fisheye lens for receiving control signals from the user selecting the at least one view of the event, simultaneously capturing at least two partial spherical video images for the event, producing output video image signals corresponding to said at least two partial spherical video images, digitizing the output video image signals, wherein, where needed, the digitizer includes a seamer for seaming together said digitized output video image signals into seamless spherical video images and a memory for digitally storing/buffering data representing said digitized seamless spherical video images and where selected, for storing billing data, and sending digitized output video image signals for the at least one portion of the multiple streaming data streams representing the at least one event to the event control transceiver,

the at least one event view control transceiver, coupled to send control signals activated by the user selecting the at least one view of the event and to receive the digitized output video image signals from said camera-imaging system/transceiver, having event view controls for selecting and sending control signals indicating at least one view for an event and for receiving at least the digitized portion of the output video image signals that encompasses said view/views selected, wherein the event view control transceiver includes a transformer processor, responsive to said digitized portion of the output video image signals, for converting said output video image signals representing the view/views selected to digital data representing a perspective-corrected planar image of the view/views selected; and

a display, coupled to receive and display streaming data for said perspective-corrected planar image of the view/views for the event in response to said control signals, wherein said display is shown on at least one window that displays the at least one view of a plurality of views

from said seamless spherical video images, and, wherein each window may simultaneously display a view is simultaneously controllable by separate user input of any combination of pan, tilt, rotate, and zoom.

2. The pay-for-view display delivery system of claim 1 wherein the event view controls include dynamically switchable channel controls to facilitate user selection and viewing of alternative/additional simultaneous views.

3. The pay-for-view display delivery system of claim 1 wherein the event view controls include dynamically switchable channel controls to facilitate user selection and viewing of alternative/simultaneous views using at least one different one of: pan, tilt, rotate, and zoom setting.

4. The pay-for-view delivery system of claim 1 wherein the user is billed on a periodic basis based on a number of views selected for the time period and a total viewing time utilized.

5. The pay-for-view delivery system of claim 4 wherein billing of the user is accomplished by charging an amount due on to a predetermined credit card of the user.

6. The pay-for-view delivery system of claim 4 wherein billing of the user is accomplished by automatically deducting an amount due from a bank account of the user.

7. The pay-for-view delivery system of claim 4 wherein billing of the user is accomplished by sending a bill for an amount due to the user.

8. A method of displaying at least one view location of an event for a pay-per-view user utilizing streaming spherical video images, comprising the steps of:

selecting, by a pay-per-view user, the at least one viewing location of the event to be viewed;

sequentially capturing said streaming, by a spherical video image capturing system, spherical video images for the event at real-time video rates;

receiving, by a pay-for-view user and perspective-correcting a portion of the streaming spherical video images that corresponds to the pay-per-view user's selecting of the at least one viewing location; and

sequentially displaying at real-time video rates, the portion of the streaming spherical video images that has been perspective-corrected wherein the viewing location/locations has/have been transformed to appear to emanate from the at least one viewing location for the event selected by the pay-per-view user.

9. The method of claim 8 further including dynamically switching/adding a portion of the streaming spherical video images in accordance with selecting, by the user, alternative/additional simultaneous view locations.

10. The method of claim 8 further including dynamically switching/altering a portion of the streaming spherical video images in accordance with selecting, by the user, alternative/additional simultaneous view locations using at least one different one of: pan, tilt, rotate, and zoom setting.

11. The method of claim 8 further including the step of billing the user on a periodic basis based on a number of view locations selected for the time period and a total viewing time utilized.

12. The method of claim 11 wherein billing of the user is accomplished by charging an amount due on to a predetermined credit card of the user.

13. The method of claim 11 wherein billing of the user is accomplished by automatically deducting an amount due from a bank account of the user.

14. The method of claim 11 wherein billing of the user is accomplished by sending a bill for an amount due to the user.

15. The method of claim 8, wherein viewing is accomplished via one of: a computer CRT, a television, a projection display, a high definition television, a head mounted display, a compound curve torus screen, a hemispherical dome, a spherical dome, a cylindrical screen projection, a multi-screen compound curve projection system, a cube cave display, and a polygon cave.

16. A computer-readable medium having computer-executable instructions for displaying at least one view location of an event for a pay-per-view user utilizing streaming spherical video images, comprising the steps of:

receiving information indicating selection, by a pay-per-view user, of the at least one viewing location of the event to be viewed;

sequentially capturing said streaming spherical video images for the event at real-time video rates from a streaming spherical video capturing system;

receiving and perspective-correcting a portion of the streaming spherical video images that corresponds to the pay-per-view user's selection of the at least one viewing location; and

sequentially sending, to a display/recording device at real-time video rates, the portion of the streaming spherical video images that has been perspective-corrected wherein the viewing location/locations has/have been transformed to appear to emanate from the at least one viewing location for the event selected by the pay-per-view user.

17. The computer-readable medium of claim 16 further including dynamically switching/adding a portion of the streaming spherical video images in accordance with selecting, by the user, alternative/additional simultaneous view locations.

18. The computer-readable medium of claim 16 further including dynamically switching/altering a portion of the streaming spherical video images in accordance with selecting, by the user, alternative/additional simultaneous view locations using at least one different one of: pan, tilt, rotate, and zoom setting.

19. The computer-readable medium of claim 16 further including the step of billing the user on a periodic basis based on a number of view locations selected for the time period and a total viewing time utilized.

20. The computer-readable medium of claim 19 wherein billing of the user is accomplished by charging an amount due on to a predetermined credit card of the user.

21. The computer-readable medium of claim 19 wherein billing of the user is accomplished by automatically deducting an amount due from a bank account of the user.

22. The computer-readable medium of claim 19 wherein billing of the user is accomplished by sending a bill for an amount due to the user.

23. The computer-readable medium of claim 16, wherein the recording device is one of: a video recorder, a DVD, a CD-ROM, a magnetic tape system, an optical recorder and a digital recorder.

24. A computer readable medium having computer readable instructions for permitting viewing of immersive video presentations comprising the steps of:

receiving a data file containing an immersive video presentation;

receiving a user input designating a desired direction of view;

transforming, in real time, in response to said user input an image relating to a portion of said immersive video presentation.

25. The computer readable medium according to claim 24, further comprising the step of:

storing said data file in an alternate representation.

26. A method for creating a three dimensional model of an environment, the method comprising the steps of:

obtaining a first video image of the environment using a first video camera at a first position;

obtaining a second video image of the environment using a second video camera at a second position different than the first position;

comparing the first video image with the second video image; and

generating a three dimensional model of the environment according to a result of the step of comparing.

27. The method of claim 26, wherein the step of generating further includes performing edge extraction on at least one of the first and second video images.

28. The method of claim 26, wherein the step of obtaining the first image includes obtaining the first video image using a first fisheye lens, and the step of obtaining the second image includes obtaining the second video image using a second fisheye lens.

29. The method of claim 28, wherein the first fisheye lens is the second fisheye lens.

30. The method of claim 28, wherein the first video camera is the second video camera, and the step of obtaining the second video image includes moving the first video camera to the second position and obtaining the second video image using the first video camera at the second position.

31. The method of claim 30, wherein the first video camera is coupled to a flying machine, the method further including flying machine flying so as to move the first video camera from the first position to the second position.

32. The method of claim 30, wherein the camera is coupled to a platform, the platform moving so as to move the first video camera from the first position to the second position.

33. The method of claim 26, further including painting a portion of the three dimensional model with a color of a corresponding portion of at least one of the first and second video images.

34. The method of claim 8, wherein the step of painting includes texture-mapping the portion of the three dimensional model with the color of the corresponding portion of the at least one of the first and second video images.

35. The method of claim 30, further including the step of measuring a distance between a third position associated with a position of the first video camera and a portion of the environment corresponding to the portion of the at least one of the first and second video images, the step of generating including correlating the at least one of the first and second video images with the distance measured and generating the three dimensional model of the environment based on the distance measured.

36. The method of claim 10, further including using a laser range finder to measure the distance.

37. A system for creating a three dimensional model of an environment, the system comprising:

a first video camera configured to obtain a first video image of the environment from a first position;

a second video camera configured to obtain a second video image of the environment from a second position different than the first position; and

a processor coupled to the first and second video cameras and configured to compare the first video image with the second video image and generate a three dimensional model of the environment according to the comparison.

38. The system of claim 37, wherein the first video camera is the second video camera.

39. The system of claim 38, further including a distance measuring device coupled to the processor and configured to measure a distance between the distance measuring device and a portion of the environment corresponding to the portion of the at least one of the first and second video images, wherein the processor is configured to correlate the at least one of the first and second video images with the distance measured and generate the three dimensional model based on the distance measured.

40. The system of claim 39, wherein the distance measuring device comprises a laser range finder.

41. The system of claim 37, wherein the processor is further configured to perform edge extraction on at least one of the first and second video images in order to generate the three dimensional model.

42. The system of claim 37, wherein the first and second video cameras each have a fisheye lens through which the first and second video images are obtained.

43. The system of claim 37, wherein the processor is further configured to paint a portion of the three dimensional model with a color of a corresponding portion of at least one of the first and second video images.

44. The system of claim 43, wherein the processor is further configured to paint the portion of the three dimensional model by texture-mapping the portion of the three-dimensional model with the color of the corresponding portion of the at least one of the first and second video images.

45. A method for creating a three dimensional model of an environment, the method comprising the steps of:

obtaining a first video image of the environment using a first video camera at a first time at which light is incident upon the environment at a first angle;

obtaining a second video image of the environment using a second video camera at a second time different than the first time at which light is incident upon the environment at a second angle different from the first angle;

comparing the first video image with the second video image; and

generating a three dimensional model of the environment according to a result of the step of comparing.

46. A method for remote collaboration at a first location of a plurality of locations and displaying said immersive video image with at least one user of a plurality of users at least one of a plurality of remote locations, the method comprising:

capturing the immersive real time video image at the first location;

receiving the immersive video image at least a first remote location;

displaying the received immersive video image on a display at said first remote location;

receiving user inputs for viewing perceptively corrected selected portions of the real time video image from a user at said first remote location; and

displaying the selected portions of the real time video image as a perspective corrected image in real time video rates at said first location.

47. A method for remote collaboration as recited in claim 46, further comprising:

receiving the immersive video image at a second remote location;

displaying the received immersive video image on a display at said second remote location;

receiving user inputs for viewing perceptively corrected selected portions of the real time video image from a user at said second remote location, said selected portion being different from the selected portions selected by the user at the first remote location; and

displaying the selected portions by the user at the second remote location as a perspective corrected image in real time video rates at said second location.

48. The method as recited in claim 47, receiving the immersive video image at said first location via an Internet.

49. The method as recited in claim 47, receiving the immersive video image at said first location via an Intranet.

50. The method as recited in claim 47, receiving the immersive video image at said second location via an Internet.

51. The method as recited in claim 47, receiving the immersive video image at the second location via an Intranet.

52. System for remote collaboration at a first location of a plurality of locations and displaying said immersive video image with at least one user of a plurality of users at least one of a plurality of remote locations, the method comprising:

a immersive video apparatus for capturing the immersive real time video image at the first location, said apparatus having at least one wide angle lens;

a first receiver for receiving the immersive video image at least a first remote location;

a first display for displaying the received immersive video image at said first remote location; and

an first input device for receiving user inputs for viewing perceptively corrected selected portions of the real time video image from a user at said first remote location, the display for further displaying the selected portions of the real time video image as a perspective corrected image in real time video rates at said first location.

53. The system as recited in claim 52, further comprising:

a second receiver for receiving the immersive video image at a second remote location;

a second display for displaying the received immersive video image at said second remote location; and

an second input device receiving user inputs for viewing perceptively corrected selected portions of the real time video image from a user at said second remote location, said selected portion being different from the selected portions selected by the user at the first remote location,

the display for displaying the selected portions by the user at the second remote location as a perspective corrected image in real time video rates at said second location.

54. A method for real time remote surveillance comprising:

capturing an immersive real time video surveillance image at a first location, said image displaying an entire region being monitored;

receiving the immersive video surveillance image at least one remote location;

displaying the received immersive video surveillance image on a display at said at least one remote location;

receiving user inputs for viewing perceptively corrected selected portions of the region being monitored from a user at said at least one remote location; and

displaying the selected portions of the real time video image of the region being monitored as a perspective corrected image in real time video rates at said at least one location.

55. A method for real time remote surveillance as recited in claim 54, further comprising:

receiving additional user inputs for viewing additional perceptively corrected selected portions of the region being monitored from said user at said first remote location, said additional user inputs being different said user inputs; and

displaying the additional perceptively corrected selected portions of the region being monitored at the first remote location.